

REMARKS

The applicants originally submitted claims 1-21 in this application. In a previous response to a restriction requirement, the applicants elected Group I (claims 1-20). In a previous response to a previous Office Action, the applicants amended claims 1-3, 6, 9, 13 and 16, and canceled claim 21. In this response to the current Office Action, the applicants have amended claims 1, 9 and 16. Accordingly, claims 1-20 remain pending in this application.

Claim Rejections – 35 U.S.C. § 112

The Examiner rejected claims 1-20 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the applicants regard as the invention. More specifically, the Examiner states that language in claim 1, step b presents uncertainty or ambiguity with respect to the question of scope of the claim.

In response, the applicants have amended independent claims 1, 9 and 16 for clarity. More specifically, the applicants have amended independent claim 1 to recite that the first atmosphere includes oxygen, and the first atmosphere further includes at least one gas selected from the recited closed group. Similarly, the applicants have amended independent claims 9 and 16 to clarify that the second atmosphere includes oxygen, and the second atmosphere further includes at least one gas selected from the recited closed group. In view of these amendments, the applicants respectfully submit that independent claims 1, 9 and 16, as amended, are certain or unambiguous. Accordingly, the applicants respectfully request that the Examiner withdraw the rejection under 35 U.S.C. §112.

The Examiner rejected claims 1-20 under 35 U.S.C. §112, second paragraph, as failing to set forth subject matter that the applicants regard as the invention. More specifically, the Examiner states that claims 1-20 fail to correspond in scope with the applicants' remarks in the applicants' reply filed January 3, 2005. Namely, the Examiner states that the claims are inconsistent

with the applicants' remarks that the partial pressure adjustment step occurs during the dehydration process step.

In response to the rejection, the applicants respectfully submit that the claim language at issue is clear. To the extent that the applicants' supporting remarks in the previous response were misleading, the applicants desire to clarify hereinbelow.

As recited in the claims, the applicants' method involves performing a number of process steps, making an adjustment to the atmosphere in which one of those process steps is performed, and then repeating the process steps. Therefore, the applicants' remarks in the previous response, which were directed to the adjustment step being performed during one of the process steps, perhaps is misleading. However, the applicants respectfully submit that the claim language is clear.

For example, in claim 1, a number of process steps are performed (steps a, b, c and d). The dehydration step (process step b) is performed in a first atmosphere, as clearly recited in the claimed step. The adjustment step (step g) adjusts the partial pressure of oxygen in the first atmosphere. Therefore, when the process steps a, b, c and d are repeated (step h), the atmosphere in which the dehydration step will be performed will have been adjusted.

Thus, the applicants' remarks in the previous response should have stated that the adjusting step is performed after the first occurrence of the dehydration step and before any subsequent repeating of the dehydration step. The applicants respectfully submit that the current claim language is clear but that such previous supporting remarks may have mislead the Examiner as to the understanding of the claim language. The applicants regret any such misleading. However, the applicants maintain that the claim language at issue is clear.

In view of the foregoing remarks, the applicants respectfully submit that claims 1-20 are clear with respect to the adjustment step, and respectfully request that the Examiner withdraw the rejection under 35 U.S.C. §112.

Claim Rejections – 35 U.S.C. § 103

The Examiner rejected claims 1-5 and 7-20 under 35 U.S.C. §103(a) as being unpatentable over Blankenship et al. (U.S. Patent No. 5,059,229) in view of Powers (U.S. Patent No. 4,165,223). The applicants respectfully traverse the rejection in view of the remarks set forth below.

Nothing in the cited references alone or in combination discloses or suggests the applicants' invention as recited in the claims. As discussed in the previous response, the applicants' invention involves adjusting the partial pressure of oxygen in atmospheres in which various steps of the fiber preform formation process are performed, namely the dehydration steps, to reduce aging loss of fibers drawn from those preforms. The primary reference, Blankenship et al., discloses a method for making optical fiber having reduced hydrogen sensitivity. Blankenship et al. draw optical fiber from a preform in a hydrogen-containing atmosphere, wherein the drawn fiber has reduced attenuation due to hydrogen absorption. As stated by the Examiner, nothing in Blankenship et al. discusses oxygen. The secondary reference, Powers, seeks to minimize dopant leaching from the preform during consolidation by using a drying gas mixture of chlorine and oxygen. Nothing in Powers suggests reducing hydrogen aging loss, by any means, during any step. Moreover, nothing in Powers suggests monitoring or determining oxygen levels in any process steps other than the consolidation step. Thus, the cited references, either alone or combined, do not teach or suggest the applicants' invention as recited in the claims.

Initially, the applicants respectfully submit that the combination of Blankenship et al. and Powers is improper for purposes of rendering the applicants' invention obvious to one skilled in the art because there is no teaching or suggestion in either reference, or in general, of combining the two references. Blankenship et al. are concerned with reduced attenuation due to hydrogen absorption and therefore draw optical fiber from a preform in a hydrogen-containing atmosphere. Powers is concerned with minimizing dopant leaching from the preform during the consolidation step and therefore provides a gas mixture of chlorine and oxygen during the consolidation step. Although both

references involve methods for making optical fiber, the two references are concerned with completely different issues at different steps in the fiber-making process, and provide completely different and unrelated solutions to attempt to resolve their respective issues.

The method in Blankenship et al. is concerned with the environment in which the optical fiber is drawn, i.e., after the optical fiber preform has been produced. The method in Powers is concerned with the consolidation step during the creation of the optical fiber preform. Clearly, the two references are concerned about two different issues that occur at different times during the fiber-making process, and there is no suggestion in either reference of combining the teachings of the two references.

Moreover, even the combination of Blankenship et al. and Powers does not disclose or suggest the applicants' invention as recited in the claims. The applicants' invention, as recited in the claims, reduces fiber transmission loss due to hydrogen aging, which occurs during the lifetime of the fiber after the fiber has been made. Hydrogen aging loss is reduced by adjusting the partial pressure of oxygen in the atmosphere in which the dehydration step occurs. The adjustment is based on the hydrogen aging loss of previously produced optical fibers, and their respective oxygen partial pressures during their respective dehydration steps. As discussed previously herein, Powers is concerned only with reducing dopant leaching during the consolidation step. Nothing in Powers discusses reducing hydrogen aging loss. Powers monitors and determines chlorine and oxygen levels during the consolidation step based on the effects these levels have on the creation of dopant oxides, such as germanium oxide. Nothing in Powers suggests adjusting oxygen partial pressure for subsequent dehydration steps based on how hydrogen aging has affected previously produced and prematurely aged optical fiber.

Finally, as stated previously herein, Powers neither discloses nor suggests anything about reducing hydrogen aging loss. Therefore, despite the Examiner's contention, no routine experimentation by one skilled in the art would involve something as specific as adjusting the partial pressure of hydrogen in the

respective atmosphere in which one or more of the applicants' fiber making process steps are performed.

The examiner's assertion that all gas flows be shut off and then adjusted up or down until optimal processing variables are determined is a drastic oversimplification of the fiber-making method. As the examiner knows, there are too many variables and process parameters for such approach to be practical, thus, such approach inherently does not constitute routine experimentation. Moreover, if such approach were deemed to be routine experimentation or obvious to one skilled in the art, then the applicants submit that every fiber-making process, or any process for that matter, ultimately can be determined through this type of so-called routine experimentation. Clearly, such is not the case.

Also, the examiner is aware that, in the fiber-making process, improving one process variable often requires compromising another process variable. Thus, there really is no one process or set of process steps that results in an overall optimal process. Fiber-making methods involve improving a particular process variable of interest. Thus, what would be obvious to one skilled in the art often depends on what the particular method is seeking to improve. The applicants' invention reduces fiber transmission loss due to hydrogen aging. Powers is seeking to minimize dopant leaching from the preform during consolidation. Nothing in Powers suggests reducing hydrogen aging loss.

Claims 2-5 and 7-8 depend from independent claim 1 and incorporate all of the features of independent claim 1. Thus, the applicants respectfully submit that claims 2-5 and 7-8 are allowable at least for all of the reasons discussed above in connection with claim 1. Furthermore, claims 2-5 and 7-8 include other features that, when combined with the subject matter of independent claim 1, are not shown in or suggested by the art of record. Similarly, claims 10-15 and 17-20 depend from independent claims 9 and 16, respectively, and incorporate all of the features of their respective independent claim. Thus, the applicants respectfully submit that claims 10-15 and 17-20 also are allowable at least for all of the reasons discussed above in connection with their respective independent

claim. Furthermore, claims 10-15 and 17-20 include other features that, when combined with the subject matter of their respective independent claim, are not shown in or suggested by the art of record.

In view of these remarks, the applicants respectfully request that the Examiner withdraw the rejection under 35 U.S.C. §103(a) over Blankenship et al. in view of Powers.

The Examiner rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over Blankenship et al. and Powers as applied to claim 1 above, and further in view of Fleming, Jr. (U.S. Patent No. 5,364,427). As discussed hereinabove with respect to the Examiner's rejection of the applicants' claims 1-5 and 7-20, the applicants respectfully submit that Blankenship et al. in view of Powers do not disclose or suggest the applicants' invention as recited in claims 1-5 and 7-20. Fleming, Jr., which is cited for its use of an overcladding tube to save cost, does not cure the deficiencies of Blankenship et al. and Powers with respect to the applicants' invention as recited in claims 1-5 and 7-20.

Claim 6 depends indirectly from independent claim 1 and incorporates all of the features of claim 1. Furthermore, claim 6 includes other features that, when combined with the subject matter of independent claim 1, are not shown in or suggested by the art of record. In view of these remarks, the applicants respectfully request that the Examiner withdraw the rejection of claim 6 under 35 U.S.C. §103(a) over Blankenship et al. and Powers in view of Fleming.

The applicants submit that all claims now are in patentable form, and respectfully urge that all the claims be allowed and the application be passed to issue. If the Examiner disagrees, the Examiner is invited to call the attorney for the applicants at the telephone number provided below.

Respectfully submitted,

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